

CLAIMS

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1. A laser eye surgical system for correcting presbyopia, the system comprising:
a laser for producing a laser beam along a beam path;
a beam shaping means disposed along the beam path for shaping; and
means for controlling the beam shaping means to treat a first zone with
a positive diopter correction and a second zone with a negative diopter
correction; the second zone being disposed inside the first zone.

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2. The system of claim 1, wherein the laser is a LASIK laser.

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3. The system of claim 1, wherein the first zone has a first diameter and the
second zone has a second diameter; the second diameter being smaller than
the first diameter.

4. The system of claim 3, wherein the first diameter is 6 millimeters and the
second diameter is 4 millimeters.

5. The system of claim 3, wherein the second zone is concentric with the first
zone.

6. The system of claim 1, wherein the positive diopter correction is the same strength as the negative diopter correction.

7. A method for ablating an area of the cornea of an eye for correcting presbyopia, the method comprising the steps of:

- (a) selecting a first zone of the cornea having a first diameter;
- (b) treating the first zone with a positive diopter correction;
- (c) selecting a second zone of the cornea having a second diameter, the second diameter being smaller than the first diameter; and
- (d) treating the second zone with a negative diopter correction, the negative diopter correction being the same power as the positive diopter correction.

8. The method of claim 7, wherein the second zone is substantially concentric with the first zone.

9. The method of claim 8, wherein the first diameter is 6 millimeters.

10. The method of claim 9, wherein the second diameter is 4 millimeters.

11. The method of claim 10, wherein the diopter power is 2.

12. The method of claim 7, wherein step (b) is performed by using a laser beam in the shape of a collapsing crescent.

13. The method of claim 12, wherein step (b) is performed by sequentially sculpting four areas with collapsing crescents.

14. The method of claim 13, wherein the four areas are disposed 90 degrees with respect to each other.

15. The method of claim 12, wherein step (d) is performed by using a laser beam in the shape of a collapsing crescent.

16. The method of claim 15, wherein step (d) is performed by sequentially sculpting four areas with collapsing crescents.

17. The method of claim 16, wherein the four areas are disposed 90 degrees with respect to each other.

18. The method of claim 7, wherein step (b) is performed by using a scanning spot laser.

19. The method of claim 18, wherein step (d) is performed by using a scanning spot laser.

20. The method of claim 7, further comprising the step of determining the shape and focusing ability of the eye.

21. A process for surgically correcting presbyopia comprising:

anesthetizing a patient;

resecting at least a portion of a cornea of an eye of the patient to expose a corneal stroma;

ablating a first annular zone of the corneal stroma using radiation from a laser beam wherein during the ablating step the first annular zone is treated with a positive diopter correction;

ablating a second annular zone within the first annular zone of the corneal stroma using radiation from a laser beam wherein during the ablating step the second annular zone is treated with a negative diopter correction; and

repositioning the portion of the cornea onto the eye wherein a central corneal curvature change is induced to thereby correct presbyopia in the patient.

22. The method of claim 21, wherein in the resecting step, the cornea is resected such that a portion of the cornea remains intact, and the cornea is folded back to expose the corneal stroma.

23. The method of claim 21, wherein in the resecting step, the cornea is resected such that a disk of the cornea is removed from the eye, to thereby expose the corneal stroma.

24. A system for surgically correcting presbyopia comprising:

means for resecting at least a portion of a cornea of the eye of the patient to expose a corneal stroma;

means for shaping a first annular zone of the corneal stroma with a positive diopter correction wherein the shaping occurs by irradiating the corneal stroma with radiation from a laser; and

means for shaping a second annular zone of the corneal stroma with a negative diopter correction wherein the shaping occurs by irradiating the corneal stroma with radiation from the laser; the second zone being positioned within the first zone.

25. The system of claim 24, wherein the second annular zone is concentric with the first annular zone.

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